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ABSTRACT

A statistical profile of Appalachia's young children, from birth to 9 years, was compiled from federal and state data sources. The profile provides information important in making immediate and long range plans for improving the status of Appalachian children and their families. An examination of family living conditions suggests that Appalachian families need continued support if they are to provide their children with a healthy and secure environment; family problems include rising divorce rates, inadequate housing, and a disproportionate number of families living in poverty. The question of what constitutes adequate child care for Appalachian children is an unsettled matter. The majority of children under 6 with working mothers are cared for in informal arrangements with relatives; only 23% are enrolled in licensed day care settings. Indicators of educational attainment point to deficiencies in Appalachian education: the rate of nursery school enrollment is just over half of the national average; achievement test scores are well below the U.S. standard; Appalachian children receive fewer instructional dollars than children in non-Appalachian portions of Appalachian states. Health care information indicates the need for better distribution of health manpower, more prenatal care and dental services, and consideration of the problems associated with teenage pregnancy. (JH)

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Appalachian Children and Their Families

A Statistical Profile

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INTRODUCTION

This statistical profile describes conditions of young children (aged 0 to 9 years) and their families in Appalachia. All information is based on secondary data sources available at the federal and state levels. Every attempt was made to make this profile as comprehensive and up-to-date as possible. Three problems arose, however, in the development of the profile. First, many federal data sources do not report data on a county basis; yet, given the boundaries of the Appalachian Region, the county unit is the essential reporting unit. Second, although states do collect data on a county basis, the data often cannot be compared across the Region because the information is not collected on a uniform basis. Third, the best source for data describing family characteristics is the U.S. Census, now rather dated. Where possible, these Census figures were updated by the use of projections.

The information in this profile is intended to help those attending the conference on Raising a New Generation in Appalachia in discussing the immediate and long-range actions needed to improve the status of Appalachian children and their families. The conference will focus on four central concerns: the conditions in which families with young children live, the manner in which children of working mothers are being cared for, the extent to which young children are being educated, and the extent to which young children enjoy a good state of health. These four topics are presented in separate chapters in this publication.

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1: APPALACHIAN FAMILIES

Introduction

Most children live with their families. In order to describe how the typical Appalachian child lives, therefore, we need to consider how Appalachian families live.

In many ways, Appalachian families today are becoming more similar to other American families. Over the last decade, many of the problems that made Appalachia a "region apart" have been eliminated or minimized. Access to the Region is much improved, and with this reduction in isolation, new economic opportunities are opening up for Appalachian families. Instead of being forced to leave in search of jobs, Appalachian's today are returning to the land they love with confidence that there is a future for them there.

But there is still much to do. Appalachian families do not enjoy all of the advantages that most Americans have. Some of the persistent differences, moreover, are difficulties that are likely to affect adversely the ability of their children to take full advantage of the opportunities before them.

Let us see what the statistics show.

The Child Population

There were approximately 2,900,000 children aged 0 to 9 living in Appalachia in 1975 (Table 1). These children constituted 15 percent of the total Appalachian population in 1975.[1]

In 1975 the Region paralleled the country in recording a low birth rate. However, birth rates in the Appalachian subregions between 1970 and 1975 declined at different rates. Northern Appalachia experienced a large decline, the southern subregion a small decline, and the central subregion an even smaller decline. Projections of average birth and death rates for the 1980 period, based on demographic trend analysis, suggest that birth rates in some Appalachian subregions may rise slightly relative to national changes, but that death rates will remain about the same as present levels (Table 2).[2]

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[1] Appalachia - A Reference Book, Appalachian Regional Commission, Washington, D.C., June 1977, p. 13.

[2] Appalachian Regional Commission, provided by Dr. Jerome Pickard.

Table 1

Populatic . Estimates Children Aged 0 - 9: 1970-1975

Geographic Region	1970	1971	1972	1973	1974	1975	% Difference 1970 - 1975
Appalachia	3,199,421	3,158,678	3,101,880	3,044,700	2,989,704	2,917,508	-8.81%
Northern Appalachia	1,654,419	1,622,400	1,582,588	1,538,949	1,500,337	1,444,609	-12.68%
Central Appalachia	316,434	313,660	310,658	309,966	308,898	309,[illegible]	-2.26 %
Southern Appalachia	1,228,508	1,222,619	1,208,634	1,195,785	1,180,469	1,163,605	-5.28 %
Non-Appalachian United States	33,847,579	33,338,322	32,618,120	31,752,300	30,881,296	30,286,492	-10.52%
United States Total	37,047,000	36,497,000	35,720,000	34,797,000	33,871,000	33,204,000	-10.37%

Source: Appalachian Regional Commission.

*Population estimates have been prepared by the Bureau of Census. The expected accuracy cannot be established with any degree of precision until the 1980 Census counts are available.

Table 2

Projected Birth Rates for Period July 1, 1975 to April 1, 1980

Geographic Region	Birth Rate	Death Rate	Natural Increase Rate
Appalachia	15.4%	10.0%	5.4%
Northern Appalachia	14.2%	10.5%	3.7%
Central Appalachia	17.2%	10.2%	7.0%
Southern Appalachia	16.5%	9.2%	7.3%
United States*	15.6%	9.1%	6.5%

Source: Appalachian Regional Commission, provided by Dr. Jerome Pickard.
*Projection model based on Census Series II projections, with trended demographic projections for subnational areas.

The Appalachian population increased almost 7 percent from 1970 to 1976; 40 percent of this increase was due to net inmigration -- a striking change from the 1950s and 1960s when thousands moved out of the Region each year.[3] This trend appears to hold true for families with young children (that is, children nine and under). In 1970 almost 80 percent of the Appalachian families with young children were living in the same county where they had resided five years earlier, as compared with 71 percent of families living outside the Region (Table 3). This pattern holds true for families in rural Appalachia (78 percent) as well as those families living in the major metropolitan areas of Appalachia (79 percent).

Table 3

Place of Residence 5 Years Ago for Individuals Over 5 Years Old Who Are Members of Families with Young Children

Geographic Region	Same County	Same State	Different State	Abroad	Moved with No Further Information	Moved with Incomplete Information
Appalachia	79%	8%	8%	<1%	3%	1%
Northern Appalachia	81%	7%	7%	<1%	3%	<1%
Central Appalachia	81%	6%	8%	<1%	3%	2%
Southern Appalachia	75%	9%	9%	<1%	4%	1%
Non-Appalachian United States	71%	10%	11%	2%	4%	1%
Non-metropolitan Appalachia	78%	9%	8%	<1%	3%	1%
Metropolitan Appalachia	79%	6%	8%	1%	4%	1%

Source: 1970 Census Public Use Sample.

Family Structure

In 1970 most Appalachian families were headed by both a mother and a father (Table 4). However, 9 percent of families with small children in Appalachia were single-parent families, a slightly smaller percentage than in the rest of the country.

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[3] 1977 Annual Report, Appalachian Regional Commission, Washington, D.C., p. 1.

Table 4

Percentage of Families with Children

Under 9 By Family Type

Geographic Region	Family Type		
	Husband-Wife Family	Female Head	Male Head
Appalachia	85%	7%	2%
Northern Appalachia	87%	6%	2%
Central Appalachia	84%	7%	2%
Southern Appalachia	83%	8%	2%
Non-Appalachian United States	86%	9%	1%
Nonmetropolitan Appalachia	88%	2%	6%
Metropolitan Appalachia	86%	1%	6%

Source: 1970 Census Public Use Sample.

Divorce, a major contributor to the incidence of fatherless families, is on the upswing in Appalachia, as elsewhere (Table 5). In 1970, there were 2.90 divorces per 1,000 population in Appalachia; by 1975, there were 4.07 divorces per 1,000 population. Divorce rates are still lower in Appalachia as a whole than in other parts of the country. However, rates vary significantly within the Region. The southern subregion experienced a divorce rate well above the national rate in both 1970 and 1975, while the northern and central subregions experienced much lower divorce rates.

Table 5

Marriage and Divorce Rates: 1970 and 1975

Geographic Region	Marriages/1,000 Population		Divorces/1,000 Population	
	1970	1975	1970	1975
Appalachia	11.3	10.62	2.9	4.07
Northern Appalachia	9.24	8.87	2.28	2.97
Central Appalachia	16.11	14.37	3.05	3.84
Southern Appalachia	13.13	12.02	3.8	5.64
Non-Appalachian United States	10.8	10.05	3.5	4.92

Source: National Center for Health Statistics.

In 1970 the majority of families with young children in Appalachia had no more than two children living in the home.[4] It thus appears that the national trend toward a two-child family is evident in Appalachia.

Racial Characteristics

The percentage of Appalachian families with small children headed by a white is considerably higher than for the country as a whole (Table 6). However, the southern subregion approaches the rest of the country in its racial composition, with 14 percent of the families with young children living in Southern Appalachia headed by a black.

Table 6

Racial Characteristics of Heads of Families with Young Children

Geographic Region	Race of Head of Household		
	White	Black	Other Racial Group
Appalachia	92%	7%	.1%
Northern Appalachia	96%	3%	<1%
Central Appalachia	97%	3%	<1%
Southern Appalachia	85%	14%	1%
Non-Appalachian United States	86%	13%	2%
Nonmetropolitan Appalachia	99%	6%	<1%
Metropolitan Appalachia	90%	10%	<1%

Source: 1970 Census Public Use Sample.

Income

Appalachian families with young children are more likely to be poor than families in other parts of the country. In 1970, 18 percent of Appalachian families with young children had incomes below the poverty level, compared with 15 percent of similar families elsewhere (Table 7). The incidence of poverty in Central Appalachia, however, is more than double the national rate.

[4] U.S. Census Public Use Sample data.

Table 7

Percentage of Families Below and

Above Poverty Level

Geographic Region	% of Families below Poverty Level	% of Families above Poverty Level
Appalachia	18%	82%
Northern Appalachia	13%	87%
Central Appalachia	36%	64%
Southern Appalachia	20%	80%
Non-Appalachian United States	15%	85%
Nonmetropolitan Appalachia	21%	79%
Metropolitan Appalachia	13%	87%

Source: 1970 Census.

In all cases, the rural areas of the Region were more poverty-stricken than the urban areas. Twenty-one percent of rural Appalachian families with young children were living in poverty, compared to 13 percent of Appalachian families living in major metropolitan areas.

Low-paying jobs contribute to the Region's high incidence of poverty. Fifty-one percent of Appalachian families in 1970 made less than $8,000 a year, compared with 38 percent of similar families elsewhere; only 22 percent of Appalachian families made more than $12,000 a year, compared with 35 percent of similar families in other parts of the country (Table 8)

Table 8

1970 Incomes of Families with Young Children

Geographic Region	Under $3000	$3,000-4999	$5000-7999	$8,000-11,999	$12,000-14,999	$15,000-24,999	$25,000 and Above
Appalachian U.S.	8%	19%	24%	28%	11%	9%	2%
Northern Appalachia	6%	16%	23%	30%	12%	11%	2%
Central Appalachia	17%	29%	23%	20%	6%	5%	1%
Southern Appalachia	10%	20%	24%	26%	10%	8%	2%
Non-Appalachian United States	6%	14%	19%	27%	14%	17%	4%

Source: U.S. Census.

Female-headed families are much more likely to be poor than male-headed families: in 1970, 60 percent of female-headed families with children under six, as opposed to 13 percent of male-headed families, reported incomes below the poverty level (Table 9). Seven percent of children benefitting from AFDC payments live in Appalachia (Table 10).

Table 9

Percentage of Families below and above Poverty Level by Type of Family

Geographic Region	Male Head of Household with One or More Children Under 6 Years of Age		Female Head of Household with One or More Children Under 6 Years of Age	
	Below Poverty Level	Above Poverty Level	Below Poverty Level	Above Poverty Level
Appalachia	13%	87%	60%	40%
Northern Appalachia	9%	91%	58%	42%
Central Appalachia	30%	70%	68%	32%
Southern Appalachia	14%	86%	59%	41%
Non-Appalachian United States	9%	91%	56%	44%

Source: 1970 Census.

Table 10

Number of Children and Families Receiving AFDC Payments in February 1977

Geographic Region	1977	
	Families	Children
Appalachia	256,152	531,136
Northern Appalachia	138,845	279,596
Central Appalachia	39,230	84,564
Southern Appalachia	78,077	166,976
Non-Appalachian United States	3,338,600	7,365,348
Total United States	3,594,752	7,896,484

Source: Social Security Administration.

Housing Conditions

The 1970 Census data indicate that there is a disproportionate share of housing with plumbing and heating deficiencies in Appalachia. Eleven percent of families with young children in Appalachia live without plumbing facilities, compared with 3 percent of similar families outside Appalachia (Table 11). In rural Appalachia this problem is more severe. Fourteen percent of Appalachian families with young children in rural areas live in homes without plumbing, compared with 4 percent of similar families living in the major metropolitan areas of Appalachia.

Table II

Percentage of Families with Young Children Living in Homes with Plumbing Facilities

Geographic Region	Status of Plumbing Facilities		
	With Complete Plumbing	Without Hot Water	Without Plumbing
Appalachia	88%	1%	11%
Northern Appalachia	94%	<1%	6%
Central Appalachia	66%	1%	33%
Southern Appalachia	87%	1%	12%
Non-Appalachian United States	96%	1%	3%
Nonmetropolitan Appalachia	85%	1%	14%
Metropolitan Appalachia	95%	<1%	4%

Source: 1970 Census Public Use Sample.

In Central Appalachia, which is predominantly rural, one-third of the families with young children live without plumbing in their homes. A substantial portion of Central Appalachian families with small children also live in houses heated by stoves or fireplaces, as opposed to more sophisticated heating methods (Table 12). Families in rural Appalachia are almost twice as likely to be without modern heating as families in the major metropolitan areas of the Region (41 percent compared with 23 percent).

Table 12

Percentage of Families with Young Children
Living in Homes by Type of Heating

Geographic Region	Modern Heating	Less sophisticated heating method	Stove, fireplace, portable room heater	Not heated
Appalachian U.S.	65%	25%	10%	<1%
Northern Appalachia	79%	17%	4%	<1%
Central Appalachia	40%	24%	35%	<1%
Southern Appalachia	53%	35%	12%	<1%
Non-Appalachian United States	71%	25%	4%	<1%
Nonmetropolitan Appalachia	59%	28%	13%	<1%
Metropolitan Appalachia	77%	19%	4%	<1%

Source: 1970 Census Public Use Sample.

Summary

The facts presented in this chapter suggest that Appalachian families need continued support if they are to provide their children with the healthy and secure environment so necessary for normal development. In planning new initiatives for children and their families, several facts should be considered:

- By 1980 the child population in Appalachia is likely to be at least as large as it is today.
- Divorce is on the upswing in Appalachia.
- The proportion of Appalachian families below the poverty line is considerably higher than the U.S. average.
- Children living in female-headed families are more likely to be living in poverty.
- Houses in Appalachia are much less likely to have adequate heating and plumbing than elsewhere in the nation-- conditions that pose a serious threat to the health of many children.

2: CHILD CARE IN APPALACHIA

Introduction

In recent years, there has been a growing demand for a variety of child care arrangements. This demand is evident in Appalachia as well as in other parts of the country. The increased demand for child care outside the home is linked in part to the growing dependence of the American family on multiple wage earners and in part to the changing family structure resulting from increased numbers of divorced and single women who head families.[1] Decision makers concerned with child development need statistics on the demand for day care services, the various child care arrangements available, the number of children enrolled in various programs, and the gap between licensed day care available and the number of children needing some kind of child care.

The Demand for Child Care

One of the most striking demographic changes that has taken place in the post-World War II era has been the increased number of women with children under 18 years of age who have joined the labor force. Since the period immediately preceding World War II, the number of women workers has more than doubled, but the number of working mothers has increased more than tenfold.[2]

Preschool-age children are the most visible target group in need of child care. In the past, the majority of mothers with preschool-age children stayed at home, but this trend is changing. Nationally, the percentage of children under age six whose mothers are in the labor force has continued to rise, from 31 percent in 1970 to 41 percent in 1978. In terms of

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[1] Z. I. Giraldo and J. M. Weatherford, Life Cycle and the American Family: Current Trends and Policy Implications, Institute of Policy Sciences and Public Affairs, Duke University, 1978.

[2] Working Mothers and Their Children, U.S. Department of Labor, 1977.

the number of children involved, these statistics translate to 6.4 million children under the age of six whose mothers work.[3] Yet in 1976 there were only 1.6 million licensed child-care openings available throughout the nation.

Older children with working mothers also need some kind of after-school care or supervision. The number of children aged 6 to 17 with mothers in the labor force has also been rising without break. In 1965 there were 12.8 million children aged 6 to 17 throughout the country with working mothers. By 1976 this number had increased to 21.7 million.[4]

The data available on mothers in the labor force in the Region are limited; therefore, it is not possible to develop a profile for the Region that is comparable to the national one presented above. However, the 1970 Census data indicate that the demand for child care created by working mothers in the Region is similar to that projected for the nation. In 1970, 29 percent of Appalachian mothers with children under six were in the labor force, compared with 31 percent of mothers in other parts of the country (Table 1). In the past eight years, given the increase in divorce rates, related changes in family structure, and economic pressures, it is likely that increasing numbers of Appalachian mothers have been entering the labor force. This will continue to increase the demand for child care outside of the home. Assuming that the Region has kept pace with the rest of the country, the percentage of working mothers with children under six in Appalachia in 1978 is probably about 39 percent of all Appalachian mothers with children under six.[5]

Table 1

Percentage of Working Mothers 16 and Over with Children under Six

Geographic Region	% of Mothers 16 and Over Married with Children and in the Labor Force
Appalachia	29%
Northern Appalachia	23%
Central Appalachia	23%
Southern Appalachia	39%
Non-Appalachian United States	31%

Source: 1970 Census data.

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[3] Congressional Record, Washington, D.C., August 24, 1978, Vol.124.

[4] Working Mothers and Their Children, op. cit.

[5] Note: The percentage of working mothers with children under six increased from 31 to 41 percent nationally between 1970 and 1978; since the percentage of Appalachian mothers was slightly smaller in 1970 than that in the nation, it is assumed to have remained slightly smaller.

Type of Child Care Arrangements

Child care comes in a variety of forms. Most children are still cared for in their home by one of their parents. Other forms of care are popularly described as day care. The term day care is applied commonly to a wide range of services including temporary babysitting operations, informal custodial care of children in neighbor's homes, formal institutional care, and preschool education in day care centers, family day care homes (see footnote to Table 2, page 12), and nursery schools.

Enrollment figures are reported for licensed child care situations, which include licensed day care centers, family day care homes, and Head Start Centers. As Table 2 shows, the most prevalent form of licensed child care in Appalachia is day care center care.

It is difficult to determine accurately the total number of children receiving care outside the home because states report enrollments only for licensed day care. In addition, there is no uniform reporting procedure across states; some states report enrollment figures, while others report capacity figures. Finally, there are discrepancies in the ages of children for which data are reported; i.e., some states report data for the preschool child (up to six years), while others report on children served in after-school arrangements as well.

The data presented in Table 2 represent only the tip of the iceberg in terms of children receiving child care outside the home. Private day care accommodations simply are not reflected in these figures. National surveys have indicated that most younger children are taken to someone else's home; organized day care arrangements are used less frequently. According to the Census survey, only 6 percent of children aged 3 to 6 whose mothers are employed full time receive care in centers.[6]

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[6]Child Care Data and Materials, Committee on Finance, United States Senate, 1977, p. 8.

Table 2

Number of Children Served by State-Licensed Child Care Arrangements: 1978

Geographic Region	Type of Child Care			
	Day Care Centers	Family Day Care Homes	Head Start	Total
Appalachia	101,972	8,288	35,747	144,007
Northern Appalachia	21,224[1]	3,817[2]	8,510[3]	33,551
Central Appalachia	8,670[4]	2,263[5]	5,032	15,965
Southern Appalachia	72,078[6]	2,208[7]	20,205	94,491
Non-Appalachian United States	897,730	N.A.	349,000	N.A.

(1) Does not include Ohio.
(2) Does not include Maryland and Ohio.
(3) Does not include New York.
(4) Includes family day care for Virginia.
(5) Does not include Virginia.
(6) Includes family day care for South Carolina and Virginia; includes public facilities only in Georgia.
(7) Includes only Mississippi, North Carolina, Tennessee.
(8) Based on the Federal Interagency Day Care Regulations, a family day care home is a home where no more than six children (3-14) in total (no more than five when age range is infancy - 6) are served, including the family day care mother's own children.

Source: State reported data.

Gap of Services

In 1970 there were approximately 353,000 Appalachian mothers in the labor force with children under six.[7] If we make the assumption that each mother had an average of 1.5 children under six, this would indicate the need for some kind of child care arrangements for approximately 530,000 Appalachian children in 1970. Since then, things have changed. First, the birth rate declined slightly from 1970 to the present, although it may be on the rise in the past two or three years. Second, the percentage of working mothers has increased from 1970 to 1978.

[7] 1970 U.S. Census.

Using projections of the birth rate and the percentage of working mothers, a very modest estimate of the number of Appalachian children under six needing child care in 1978 is approximately 633,000.[8] Table 2 indicates that only 102,000, or about 23 percent, of these children are enrolled in licensed day care arrangements. This may represent adequate coverage since the majority of children under six with working mothers are cared for in informal arrangements with relatives and neighbors. However, the entire question of what constitutes adequate child care is an unsettled matter which engenders important questions with no fixed answers. In considering the advisability of expanding licensed child care arrangements for children in Appalachia, two facts deserve attention:

- The percentage of working mothers in the labor force is on the upswing in Appalachia.
- Licensed day care settings supply care for a minority of children under six with working mothers.

[8] Using 1970 birth rate projections, we can estimate the number of Appalachian children under six in 1978 to be 1,623,519. Using Census projections, we assume mothers with children under six have an average of 1.5 children in this age range; this would yield 39 percent of these mothers. Using an earlier projection (see page 2-2) we can estimate that 39 percent of these mothers are working in 1978. This yields a total of 422,114 working mothers, or 633,171 children (422,114 x 1.5) in need of some kind of child care or supervision.

3: EDUCATIONAL STATUS OF THE CHILD

Introduction

As of 1970, the Appalachian Region lagged behind the nation in the educational attainment of its adults, youth and young children, based on four indicators: completion of high school, completion of four or more years of college, the dropout rate of high school students, and school enrollment of children aged 3 and 4.

This chapter is concerned primarily with the education of children in nursery school (ages 3-4) through third grade (ages 8-9). Children learn through both indirect transmission of information and through direct instruction; therefore, it is important to consider the level of education of the significant models (adults) in a child's life as well as the child's exposure to formalized education.

School Participation

It is important to know how many children are being reached by the formal education system in order to determine whether children are receiving adequate formal instruction. Two measures of school participation are school enrollment and average daily attendance.

The total number of children enrolled in all grades, nursery school through eighth, in Appalachia in 1970 was 2,869,888. This figure includes all children enrolled in public, parochial and private schools and accounts for approximately 75 percent of the eligible children (Table 1). Enrollments for Appalachia and the United States are comparable for the oldest group (7-13 years). However, a discrepancy is reported in the school enrollment of younger children. In 1970, 7 percent of the 3- and 4-year-old children in Appalachia were enrolled in school compared with 13 percent throughout the country. There was also some variation, between the Region and elsewhere, in the percentage of 5- and 6-year-olds enrolled in school. This variation in percentage enrolled in Appalachia and elsewhere in 1970 may have been due to the lack of availability of kindergarten facilities in some parts of Appalachia. However, since 1970 regulations requiring the provision of kindergarten services have become common in the Region. By 1978, all but one of the Appalachian states

had mandated that kindergarten space be made available to any child who desired it, and one state had legislated mandatory attendance for kindergarteners.

Table 1

1970 School Enrollment as a Percentage of Child Population
(Nursery thru 8th Grade, Public, Parochial and Private Schools)

Geographic Region	Ages 3-4	Ages 5-6	Ages 7-13	Ages 3-13
Appalachia	7%	61%	96%	75%
United States	12%	73%	97%	79%

Source: 1970 Census.

The public school enrollments for the 1976-1977 school year for kindergarten through third grades are presented in Table 2. The U.S. public school enrollment represented 71 percent of the child population aged 5 to 9 (based on the 1975 population estimates); the Appalachian enrollment is slightly higher.

Table 2

1976-1977 Public School Enrollment
K-3

Geographic Region	Enrollment	Population aged 5-9 Estimate (1975)*	%
Appalachia	1,133,933	1,527,920	74%
Northern Appalachia	539,773	764,410	71%
Central Appalachia	135,117	160,903	84%
Southern Appalachia	456,043	602,607	76%
United States	12,303,000	17,325,000	71%

Source: State Departments of Education.

*Population estimates have been prepared by the Bureau of Census. The expected accuracy cannot be established with any degree of precision until the 1980 Census counts are available.

The fact that Central Appalachia has an enrollment level eight percentage points higher than the other two subregions may have several explanations. First, the central subregion may provide kindergartens and encourage attendance to a greater degree than the other subregions. This speculation is supported by the fact that Virginia has mandatory kindergarten attendance. There is also some evidence that the northern and southern subregions, as a whole, have smaller participation rates for kindergarten. The second possible explanation is that the

central subregion has relatively fewer children enrolled in private and parochial schools than either of the other two subregions. Table 3 shows that, even in 1970, Central Appalachia reported a higher public school enrollment than the other subregions. Only the elementary grades in Southern Appalachia had nearly as high a rate of public school enrollment. However, data from at least one Southern state indicate that private school enrollments have decreased dramatically since 1970.[1]

Table 3

1970 School Enrollment by Type of School

Geographic Region	Nursery School			Kindergarten			Elementary (1-8)		
	Public	Parochial	Private	Public	Parochial	Private	Public	Parochial	Private
Appalachia	44%	4%	53%	79%	4%	16%	93%	6%	9%
Northern Appalachia	45%	3%	52%	91%	3%	7%	88%	12%	6%
Central Appalachia	71%	3%	29%	84%	1%	15%	99%	5%	5%
Southern Appalachia	39%	5%	56%	50%	6%	44%	98%	1%	1%
United States	32%	5%	63%	84%	5%	11%	88%	10%	1%

Source: 1970 Census.

A second measure of school participation is attendance at school. Nonattendance or absenteeism is an issue of concern for educators of young children. Nonattendance can result from several factors, including illness, lack of interest, lack of parental supervision or inadequate transportation. Whatever the reason, the end result is the same; the child is missing invaluable opportunities to develop and learn. Table 4 presents average daily absence as a percentage of enrollment. Absence from school in the Appalachian Region is one third higher than for the entire country; for the central subregion the difference is even more pronounced.

[1] State Department of Education

Table 4

Average Daily Attendance as a Percentage of Enrollment: Public Schools: K-6
1976 - 1977

Geographic Region	Enrollment	Average Daily Attendance	%
Appalachia	1,213,988	1,065,748	11%
Northern Appalachia	362,172	336,876	7%
Central Appalachia	99,399	86,952	13%
Southern Appalachia	752,187	661,920	12%
United States	44,335,000	40,834,949	8%

Source: State Departments of Education

Academic Achievement

For years educators have sought an accurate measure of academic growth. The result has been a group of standardized achievement tests which allow evaluators to compare one student's knowledge, usually of reading or mathematics, with that of other students in the same state, on special state-referenced tests. The nationally standardized tests used by the Appalachian states are: the Iowa Test of Basic Skills (2 states); the California Achievement Test (3 states), the Stanford Achievement Test (1 state), the Science Research Associates Achievement Test (1 state), the Short Form Test of Academic Aptitude (1 state) and the Comprehensive Test of Basic Skills (1 state). One of the states used only a state criterion-referenced test. Achievement test data were obtained in a usable form from 9 of the 13 Appalachian states. Table 5 shows that reading achievement is below either a national or state standard in 34 percent of the Appalachian counties reporting.

Table 5

Country Rankings on Achievement Tests
3rd or 4th grades: 1976-1977

Geographic Region	Percent of Appalachian Counties Reporting	Reading		Math	
		Percent of Counties Reporting at or above National/State Standard	Percent of Counties Reporting below Standard	Percent of Counties Reporting at or above National/State Standard	Percent of Counties Reporting below Standard
Appalachia	57%	66%	34%	43%	57%
Northern Appalachia	42%	63%	37%	58%	42%
Central Appalachia	19%	31%	69%	6%	94%
Southern Appalachia	88%	62%	38%	39%	61%

Source: State Departments of Education.

In mathematical achievement, 57 percent of the Appalachian counties reporting are below the standard. In both reading and mathematics the central subregion includes a disproportionately large percentage of reporting counties achieving below the standard. It appears that a large percentage of Appalachian counties are below either a national or a state standard. In Southern Appalachia the data may indicate higher achievement than is the case. Two states in the southern subregion have compared their test scores only to a state, not a national, standard; yet in both cases the entire state is achieving well below the national norm.

Educational Status of Older Children and Adults

Children are greatly influenced by the adults and older siblings in their family. The extent to which these family members are educated is related to the child's exposure to and acceptance of critical learning experiences. In 1970, 56 percent of all adults in the Region aged 25 years and over had not completed four years of high school, contrasted with 48 percent of the non-Appalachian United States (Table 3). An even more strict criterion, completion of four or more years of college, shows Appalachia to have roughly two-thirds the U.S. rate, and Central Appalachia to have less than one-half the U.S. rate. In families with young children this same phenomenon is evident. Compared to the non-Appalachian U.S., the Appalachian Region has relatively more individuals terminating their education after 12th grade, and relatively fewer individuals continuing onto college.[2]

[2]Source: 1970 Census Public Use Sample.

Table 6

Adult Education Attainment: 1970

Geographic Region	Percent of Persons: 25 Years and Older	
	Less than High School Education	4 or More Years of College
Appalachia	56%	7.3%
Northern Appalachia	50%	7.6%
Central Appalachia	72%	5.0%
Southern Appalachia	62%	7.4%
United States	48%	10.7%

Source: Appalachia - A Reference Book

The number of teenage students dropping out of school is another measure of Appalachian educational attainment. This is indirectly measured by the number of 16- and 17-year-olds not enrolled in school, adjusted by the number who have already completed high school. In 1970, the dropout rate was 14 percent in the Region, but only 10 percent in the United States (Table 7). The U.S. figure can be reduced by 11.5 percent to account for those 16- and 17-year-olds who completed high school early. A comparable statistic for the Appalachian Region is not available. However, it is likely that, at least in the central subregion, a small percentage of students have completed school early, so that the actual difference between the central subregion and the United States may be even more profound. In contrast, the northern subregion has relatively fewer dropouts than the rest of the country. In all areas there was a vast improvement between the years 1960 and 1970. The U.S. dropout rate decreased roughly 40 percent. The northern subregion dropped to the same degree, while the central and southern subregions showed approximately a 30 percent decline.

Table 7

Percent of Dropouts
16-17 Years Old
1960 - 1970

Geographic Region	1960	1970	% Decrease
Appalachia	22.9	14.1	38%
Northern Appalachia	18.5	9.8	47%
Central Appalachia	32.5	22.7	30%
Southern Appalachia	25.8	17.9	31%
United States	19.1	10.1*	42%

Source: Appalachia - A Reference Book

*Census data indicate that 11.5 percent of these students had completed at least four years of high school and are not dropouts.

Educational Costs per Pupil

One indicator of the quality of education is the amount of money being spent per child for education. It is not possible to develop a clear profile of how Appalachia compared to the rest of the country because of variations in computing the two cost indicators of interest, instructional costs per pupil and total current expenditures per pupil. However, within each of the Appalachian states, the per pupil expenditures in the Appalachian portion can be compared to the expenditures in the non-Appalachian portion. Instructional costs generally include teachers' salaries, instructional materials and supervision of teachers, while total current expenditures generally include instructional costs as well as all ancillary services such as food and transportation. In nine of the eleven states for which 1976-1977 data were available, the Appalachian portion of the state was receiving less instructional money per pupil than the non-Appalachian portion of the state. This differential within a state was as much as $357 per pupil.[3]

The situation is even more striking when one considers total current expenditures; the differential there is as much as $536 per pupil. The U.S. total current expenditure per student was $1,578.[4] Only in New York did the Appalachian per pupil current expen-

[3] State Departments of Education.

[4] National Center for Education Statistics, 1976-1977.

diture meet the U.S. figure. In fact, in five out of the eleven states, the total expenditures were less than one-third the national average. Comparisons with the U.S. figure must be tentative, as the definition of total current expenditures varies.

Table 8 presents a picture of the unequal expenditures per student within subregions. Comparisons cannot be made across subregions as the elements included in the expenditure categories differ. Still, it is obvious that in all but the southern subregion the Appalachian portion spends less money per pupil than the non-Appalachian portion.

Table 8

Per Pupil Educational Costs

Geographic Region	Total Instructional costs per pupil	Total current expenditures per pupil
Northern Appalachian States		
Appalachian portion	$ 857	$1,344
Non-Appalachian portion	1,248	1,977
Central Appalachian States		
Appalachian portion	613*	828
Non-Appalachian portion	688	1,049
Southern Appalachian States		
Appalachian portion	615**	935
Non-Appalachian portion	691	905
Appalachia	758	1,166
Total Non-Appalachian Portions of Appalachian States	1,031	1,572

Source: State Departments of Education

* Virginia not included in central subregion

** Alabama and Virginia not included in southern subregion

The cost differentials demonstrated above may be due in large part to differences in teachers' salaries, which are set either by the state or the individual school board.

Table 9 demonstrates that for selected federal programs, Appalachian children are receiving fewer funds per pupil than non-Appalachian children. Across four categorical programs, in fiscal year 1976, the per capita expenditure per poor child was $25.59 in Appalachia and $30.26 in other parts of the country.

Table 9

Selected Federal per Capita Educational Service Outlays for FY 1976

Educational-Related Programs	Dollars Spent on Non-Appalachian Poor Children per Capita	Dollars Spent on Appalachian Poor Children per Capita
Educationally Deprived Children	$28.07	$25.42
Educationally Dependent - In State Institution	.43	.05
Education Department State Administration	.31	.03
Educationally Dependent - Handicapped	1.45	.09
Total	$30.26	$25.59

Source: Compiled for the Executive Office of the President by the Community Services Administration/Appalachian Compilation by Appalachian Regional Commission staff, November, 1977.

Summary

Education of Appalachia's youth is crucial both to personal development of the children and to the development of the Region as a whole. There are some obvious deficiencies in Appalachian education on which interest must be focused.

- The rate of Appalachian nursery school enrollment is just over half that of the United States.
- Appalachian children are absent from school more often than children in the rest of the country.
- A large number of school districts in Appalachian counties need to improve their reading and mathematics achievement test scores to approach the U.S. standard.
- Appalachians terminate their education at an earlier grade than persons in the rest of the country.
- The Appalachian dropout rate in 1970 was one-and-one-half times as high as the U.S. rate and was over twice as high in Central Appalachia.
- Appalachian children receive fewer instructional and total current expenditures per pupil than children in non-Appalachian portions of Appalachian states.

4: THE HEALTH STATUS OF APPALACHIAN CHILDREN

Introduction

Statistics about health conditions of children in Appalachia are rather scarce. The state vital statistics reports do present a wealth of information on health conditions; however, much of this information is not comparable across states. Some indicators are available to chart the health status of children throughout the Region: estimates of health resources available, data on infant mortality and infant morbidity, childhood sickness, and nutritional and dental status, and estimates of teenage pregnancies.

Health Care Resources

As has been true for years, Appalachia falls behind the nation in availability of health resources. In 1963 Appalachia had proportionately fewer physicians, dentists and nurses.[1] Since then, the Region has attracted larger numbers of health providers; however, the distribution of health resources across the Region is uneven.

In 1962, Appalachia had an average of .9 physician per 1,000 population; this was 34 percent lower than the national average.[2] In 1970, Appalachia still had less than one physician per 1,000 population, compared with an average of 1.37 per 1,000 in the country as a whole. By 1976 the situation throughout the country, and in Appalachia, had improved. The average ratio of physicians in Appalachia was 1.58 per 1,000 population and 1.75 per 1,000 population in the country as a whole (Table 1).

Although the situation has improved generally, 45 percent of the Appalachian counties have been designated as health manpower shortage areas by the Health Resources Administration.

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[1] Assessment of the Health and Child Development Program of the Appalachian Regional Commission, Washington, D.C., July 1975.

[2] Health Advisory Committee Report, Appalachian Regional Commission, March 1966.

Table 1

Ratio of Active Nonfederal Physicians to Total Population: 1970 and 1976

Geographic Region	1970 per 1,000 Population	1976 per 1,000 Population
Appalachia	.91	1.58
Northern Appalachia	.99	1.29
Central Appalachia	.62	.72
Southern Appalachia	.86	2.21
Total United States	1.37	1.74

Source: Physician Distribution and Medical Licensure in the U.S., (1970 and 1976), Chicago, American Medical Association).

Prenatal Care

Prenatal care is one of the most important services affecting the health of the child and mother. Based on a sample of 477 live births in Appalachia in 1978, 42 percent of the mothers received prenatal care during the first trimester, 38 percent waited until the second trimester for their first visit, and 21 percent waited until the third trimester for their first visit.[3] A national study of prenatal care suggests that mothers in the Region are not receiving prenatal care as early as mothers across the country. The study indicated that for both white and black mothers in the nation as a whole, the most usual time for the first prenatal visit was during the first three months of pregnancy. In 1975, 76 percent of all white mothers started care in the first trimester of pregnancy. The proportion of black mothers starting care in the first three months was 56 percent in 1975.[4]

Infant Mortality and Infant Morbidity

Between 1960 and 1975 the national infant mortality rate dropped 45 percent. Appalachia, like the rest of the country, has experienced a decrease in infant mortality. In 1963, the Appalachian infant mortality rate was 11 percent higher than the national average; in 1974 it was 6 percent higher; and in 1976 there was less than one-percent difference between Appalachia and other parts of the country in infant mortality (Table 2).

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[3] Sample data provided by the Appalachian Regional Hospital data bank, Lexington, Ky.

[4] Prenatal Care, United States, 1969 - 1975, U.S. Department of Health, Education and Welfare, September 1978.

Table 2
Infant Mortality - 1976

Geographic Region	Total Live Births	Total Infant Deaths	Rate per 1,000
Appalachia	271,837	4,291	15.79
Northern Appalachia	132,765	1,924	14.63
Central Appalachia	31,461	534	17.01
Southern Appalachia	107,611	1,833	17.04
Non-Appalachian United States	2,904,639	43,974	15.14

Source: National Center for Health Statistics.

Caution should be taken in assuming that infant mortality for the Region as a whole has decreased dramatically. Over one-fourth of the Appalachian counties reported an infant mortality rate in 1976 which was one-and-a-half times the average rate for other parts of the country. These crisis counties do not cluster in a particular subregion; rather, they are dispersed throughout the Region, but primarily in Southern and Central Appalachia. Reducing the number of infant deaths in these crisis counties would substantially decrease both the regional and national infant mortality rates.

Low birth weight[5] is associated with a greatly increased frequency of infant mortality and infant morbidity. The Appalachian Region has a slightly higher percentage of births of low weight than the country as a whole. In 1976, the percentage of low-birth-weight births in Appalachia was 7.3 percent; in the country as a whole it was 7.5 percent in 1975 (Table 3).

Table 3
Percentage of Infants of Low Birth Weight

Geographic Region	% of Infants of Low Birth Weight
Appalachia	7.3%*
Northern Appalachia	6.9%*
Central Appalachia	7.3%*
Southern Appalachia	7.3%*
United States	7.5%**

Source: *1976 sample data reported by state vital statistics report.

**Prenatal Care, United States, 1975, data Public Health Services.

[5] Low birth weight is defined as 2,500 grams or less - 5 pounds, 8 ounces, or less.

Childhood Diseases

Data on the most frequent illnesses diagnosed for children up to 14 years of age have been compiled on a sample basis for children served in pediatric clinics operated by the Appalachian Regional Hospitals. The most frequent diagnoses in 197[illegible] included acute otitis media (weeping ear), acute upper respiratory tract infection, acute tonsillitis, influenza, bronchitis and bronchiolitis, eczema and allergic dermatitis, lacerations, open wounds, and trauma amputation, viral infections, and presumed infectious intestinal diseases.

A national ambulatory care study of children and young adults[6] identifies the most frequent diagnoses for a sample of children and young adults broken down by age grouping. In order to compare the diagnoses made for Appalachian children with those made for children across the country, the most common diagnoses were ranked by frequency of occurrence for both the national sample and an Appalachian sample of children up to age 14. Table 4 indicates a similarity in pattern of diagnoses for Appalachian children and U.S. children generally, except that upper-respiratory illnesses are more frequent in Appalachia.

Table 4

Diagnoses in Children up to Age 14 Seeking Ambulatory Care in Appalachia and United States

Common Diagnoses	% of Children in Appalachia*	% of Children across United States**
Diseases of Circulatory System	1%	1%
Neoplasma (Cancer)	1%	1%
Endocrine, Nutritional and Metabolic Diseases	1%	1%
Mental Disorders	1.6%	1%
Diseases of Muscoskeletal System	1.7%	1%
Diseases of Genitourinary System	1.8%	5.4%
Diseases of Digestive System	1.9%	3.2%
Symptons and Ill-Defined Conditions	4.4%	4.5%
Diseases of Skin and Subcutaneous Tissue	6.5%	7.0%
Infective and Parasitic Diseases	7.3%	9.9%
Accidents, Poisonings, Violence	7.9%	8.5%
Diseases of Nervous System and Sense Organs	12.0%	12.1%
Special Conditions and Examinations Without Sickenss	25.4%	22.6%
Diseases of Respiratory System	27.7%	22.6%

Source: *1970 Sample data provided by Appalachian Regional Hospitals - Pediatric Clinics; **1975 Sample data provided by National Ambulatory Medical Care Survey, Public Health Service.

[6] Ambulatory Care Utilization Patterns of Children and Young Adults: National Ambulatory Medical Care Survey, Public Health Services, August 1975.

Teenage Pregnancies

The birth rate for young teenagers is on the upswing. Birth registration data on illegitimate births to teenage women indicates that sizable increases in illegitimacy have occurred since 1950. In 1950 there were 12.6 births per 1,000 unmarried women 15 to 19 years in the United States; in 1970 this figure was 22.4, and by 1975 it was 24.2[7]

In Appalachia, where people typically marry young, the percent of teenage births is higher than for the nation as a whole (Table 5).

Table 5

Percentage of Births to Teenagers (13-17 years) 1971-1975 Composite

Geographic Region	% of Live Births to Teenagers
Appalachia	9%
Northern Appalachia	7%
Central Appalachia	13%
Southern Appalachia	10%
Total	7.5%

Source: Bureau of Community Health Services

Appalachian physicians are expressing increased concern over the problem of teenage pregnancies, a problem much more prevalent in Central Appalachia than in the nation as a whole. Teenage pregnancies are a real problem because young girls are not always physically prepared for childbirth. In 1973 more than one quarter of the babies born to teenage mothers were of low birth weight and consequently more prone to mental retardation and other handicapping conditions.

Nutrition

The First Health and Nutritional Examination Survey (HANES) indicated that approximately 95 percent of all preschool children and women of childbearing age in the United States have insufficient amounts of iron in their diets. Although the HANES data have not been aggregated for the Region, it is reasonable to assume that iron deficiency characterizes the Appalachian child's diet. In fact, a 1976 nutrition survey conducted in several Appalachian counties

[7] National Health Services Corps, Promoting Community Health, U.S. Department of Health, Education and Welfare, 1975.

indicated that the primary nutrition-related condition affecting mothers and young children is anemia.[8] This is an indicator of dietary patterns with low iron intake.

The Senate Committee on Nutrition and Human Needs identified one-fourth of the Appalachian counties in 1973 as "hunger" counties or "failure-to-feed" counties. "Hunger" counties are those counties in which more than 25 percent of the population is poor, but fewer than one-third of those poor benefit from federal food programs. "Failure-to-feed" counties are those counties that do not have unusually high numbers of poor residents, but that fail to provide food assistance to two-thirds or more of whatever poverty population they do have.

The Women, Infants and Children Program (WIC) is designed to improve the nutritional status of children and women of childbearing age. In 1978 the percentage of children served by WIC was compared to the national average (Table 6). The program is most heavily utilized in Central Appalachia.

Table 6

Population Being Served by WIC Program in Summer 1978

Geographic Region	Number Served	Number per 1,000 Population
Appalachia	113,843	5.93
Northern Appalachia	31,125	3.14
Central Appalachia	20,380	10.47
Southern Appalachia	62,338	8.49
Total United States	1,265,132	5.89

Source: State Health Departments.

Current research indicates that preschool children from lower socioeconomic classes are at greater risk because they do not have sufficient food.[9] Given the economic conditions facing many Appalachian families, there is reason to be concerned about the nutritional status of Appalachian children.

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[8]Results of a Three-County Nutrition Survey in Southeastern Kentucky, Appalachian Regional Commission, October 13, 1976.

[9]Promoting Community Health, p. 21.

Dental Health

Two predictors of dental health are number of dentists and exposure to fluoridated water. Appalachia falls behind the country as a whole in number of dentists per 1,000 population (Table 7). The situation is particularly serious in Central Appalachia. It has been suggested by some health experts that even in those Appalachian counties that have several dentists, children are often not receiving adequate care.

Table 7

Dentists: 1976

Geographic Region	Number of Full-Time Dentists	Number per 1,000 population
Appalachia	5,652	.29
Northern Appalachia	3,198	.32
Central Appalachia	357	.18
Southern Appalachia	2,097	.28
Total United States	96,407	.40

Source: American Dental Association, 1976.

After prolonged debate, detailed longitudinal research has fairly conclusively demonstrated the beneficial effects of exposing children to fluoridated water. Taking this research and other facts into consideration, the National Research Council, as early as its 1958 revision of Recommended Dietary Allowances, termed fluoride "a nutrient important for formation of caries-resistant enamel."[10]

Over 50 percent of the non-Appalachian population drinks fluoridated water, compared with 37 percent of the Appalachian population (Table 8).

[10]James Morse Dunning, Principles of Dental Public Health, Harvard University Press, 1974, p. 381.

TABLE 8

Population Drinking Fluoridated Water
(Natural or Added): 1975

Geographic Areas	% of Populatica
Appalachia	37%
Non-Appalachian Areas	51%
Northern Appalachia	35%
Central Appalachia	38%
Southern Appalachia	41%
Total United States	49%

Source: Fluoridation Census 1975, U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control..

Financial Allocations

Based on a sample of federally funded health program allocations for fiscal year 1976, fewer dollars per poor child are spent on health programs in Appalachia than in other parts of the country (Table 9). On the average, across six categorical programs in fiscal year 1976, $1.73 was spent per poor child in Appalachia, compared with $5.34 per poor child in other parts of the country.

Table 9

Selected Federal per Capita Health Service Outlays for FY 1976

Health-Related Programs	Dollars Spent on Non-Appalachian Children per Capita	Dollars Spent on Appalachian Poor Children per Capita
Child Care Food Program	$1.01	$1.00
Communicative Disorders	.30	.02
Community Food and Nutrition	.006	---
Comprehensive Public Health Services	1.39	---
Crippled Children	1.15	.16
Family Planning Projects	1.48	.55
Total	$5.34	$1.73

Source: Compiled for the Executive Office of the President by the Community Services Administration/Appalachian Compilation by Appalachian Regional Commission staff, November 1977.

Immunizations

Over the last decade, there has been a 12-percent decline in the proportion of preschool children in the United States who have received at least three doses of polio vaccine. In 1976, 71 percent of all children received at least three doses of diptheria-tetanus-pertussis (DTP) vaccine. The proportion of children adequately immunized against measles increased from 45 percent in 1966 to 66 percent in 1976. Proportions of children receiving rubella vaccine has risen since mid-1969, when the licensure of rubella-like virus vaccine began. The rubella immunization level increased by 25 percentage points between 1970 and 1976.

An earlier effort was made to develop comparable statistics for the Appalachian Region. However, a profile describing level of immunizations provided to Appalachian children could not be developed because of inconsistencies in reporting these data. Some states report immunizations by type of innoculation; other states report number of innoculations given rather than number of children innoculated, and so on. Given the dearth of available information on immunizations, caution should be taken in assuming that Appalachia's children are protected from childhood diseases. Special precautions should probably be taken to protect Appalachian children with a full battery of immunizations appropriate to each age group since the Region's isolation often makes treatment of childhood diseases more difficult if children contract them.

Summary

If Appalachian children are to look forward to a life as free as possible from disease, disability, and physical discomfort, a number of advances in providing adequate health care must be realized:

- Better distribution of health manpower is required, particularly in those counties designated as medically underserved counties.
- A large percentage of Appalachian mothers should be receiving prenatal care early in their pregnancy.
- Adequate dental services to children should be available.
- Problems associated with teenage pregnancy are serious and indicate the need for prenatal care, parent education and counseling, nutrition education, family planning and family support.